The 31st Congress of the European Society of Cardiology was held in Barcelona, Spain, from August 29, 2009, to September 2, 2009, revealing several breaking trials in the field of interventional cardiology. Three years after the World Congress of Cardiology ignited controversy in the same city regarding the risk of stent thrombosis with drug-eluting stents (DES), ESC Congress 2009 appropriately began their annual session with a review of follow-up registry and trial data on stent thrombosis risk with DES.

SCAAR

Although the initial data from the SCAAR (Swedish Coronary Angiography and Angioplasty Registry) presented during the 2006 U.S. Food and Drug Administration hearing on the concerns of DES indicated that combined rates of death and myocardial infarction (MI) 6 months after percutaneous coronary intervention (PCI) were significantly higher among DES compared with bare-metal stent (BMS)-treated patients (1), new SCAAR data presented on almost 61,000 patients treated with stents from 2003 to 2006 showed that the rates beyond the 1-year mark have been no different between the 2 arms (2). This further emphasized the need for dual antiplatelet therapy until complete vascular endothelialization has occurred or for at least 1 year. While there was general acknowledgment of the flaws of registry data, there was consensus that the outpouring of further data since 2006 have been reassuring for the continued use of DES. However, the safety and efficacy can be variable based on the type of DES stent used as previously elucidated by various trials, most recently the ZEST (Zotarolimus-Eluting Stent Versus Sirolimus-Eluting Stent and Paclitaxel-Eluting Stent for Coronary Lesions) trial presented at the American College of Cardiology Scientific Session 2009 (3).

ISAR-TEST-4

In the emerging field of bioabsorbable DES, results from the ISAR-TEST-4 (Intracoronary Stenting and Angiographic Results: Test Efficacy of 3 Limus-Eluting Stents) study found a novel sirolimus-eluting stent with a biodegradable polymer to be equally as effective as Cypher (Cordis, Miami Lakes, Florida) and Xience (Abbott, Abbott Park, Illinois) stents with their standard permanent polymers. The trial of 2,603 patients randomized patients to Cypher, Xience, or a stainless steel stent coated with a biodegradable polymer loaded with sirolimus and coated with a bio-compatible shellac resin (4). At 1 year, the biodegradable polymer stent was noninferior to the combined Cypher/Xience group for the primary end point of a composite of death, MI, or target lesion revascularization (TLR) without any statistically significant differences in stent thrombosis or restenosis.

SYNTAX

In the debate between coronary artery bypass grafting (CABG) versus percutaneous coronary intervention (PCI) for complex coronary disease, the 2-year follow up from the SYNTAX (Synergy between PCI with Taxus and Cardiac Surgery) trial reported continued divergence from the initial 1-year data: The 1,800-patient trial found that major adverse cardiac and cerebrovascular events (MACCE) after 1 year occurred significantly more often among PCI-treated than among CABG-treated patients driven by repeat revascularization in the PCI group (5). Although the composite safety end point of death/cerebrovascular accident (CVA)/MI rates were almost identical in both groups, the CVA rate was significantly higher in the CABG group. At 2 years, MACCE rates continued to be significantly different favoring the
CABG arm, again driven by the repeat revascularization rate in the PCI arm (6). The higher rate of CVA seen in the CABG group after the first year did not increase in the second year. Furthermore, the trend towards higher MI noted in the PCI arm at 1 year became statistically significant at 2 years. Although various reasons for this difference have been offered, further data regarding the types of resultant MI have not been reported.

**GRACE**

Despite equivocal results for PCI in complex coronary disease from the SYNTAX trial, new data from the GRACE (Global Registry of Acute Coronary Events) shows that PCI is an acceptable revascularization strategy in patients with unprotected left main coronary artery disease (LMCAD) presenting with acute coronary syndrome (ACS). Although unprotected LMCAD in ACS is a rare entity, it is associated with high mortality and is primarily treated with PCI rather than being referred for CABG or medical therapy which confers greater risk. The results of 1,799 patients with ACS and LMCAD, representing 4% of patients included in GRACE between 2000 and 2007, showed that PCI was associated with a 55% reduction in the risk of death compared with medical therapy despite being performed in higher-risk patients that were deemed poor candidates for surgery (7). Although CABG procedures were also associated with a reduction in the risk of death, they had higher rates of stroke at 6 months in comparison to medical therapy or PCI.

**ATTEMPT**

The results of the ATTEMPT (Pooled Analysis of Trials on Thrombectomy in Acute MI based on Individual Patient Data) reaffirmed the benefit of thrombectomy during PCI for ST-segment elevation myocardial infarction (STEMI). The grouped results of 11 randomized trials on 2,686 patients with a median follow-up of 365 days found that randomization to thrombectomy was associated with significantly lower all-cause mortality and MACE rates (8). Further subanalysis revealed that the survival benefit was limited to patients that underwent manual thrombectomy as opposed to mechanical thrombectomy.

**TRIANA**

The Spanish TRIANA (Tratamiento del Infarto Agudo de Miocardio en Ancianos) trial that compared PCI with thrombolysis in elderly patients 75 years of age and older with acute MI found that primary angioplasty was better in reducing the need for future revascularization with a non-significant trend in favor of reducing death and MI (9). The trial randomized patients with STEMI of 6 h or less in duration to thrombolysis with tenecteplase and unfractionated heparin or to primary angioplasty. Patients receiving thrombolysis fared worse in all primary end point components: death, reinfarction, and disabling stroke. However, the trial was underpowered enrolling only 266 patients of the 570 that were initially planned, due to reluctance on the part of clinicians to refer for randomization out of concerns for bleeding from thrombolysis.

**PLATO**

The PLATO (Platelet Inhibition and Patient Outcomes) study compared the treatment of patients with ACS with the investigational oral antiplatelet agent ticagrelor against clopidogrel. Patients (n = 18,624) admitted with ACS in 43 countries were randomized to receive either drug with a loading dose and maintenance in addition to aspirin (10). The primary end point—a composite of death, MI, or CVA—was significantly lower in the ticagrelor group compared with the clopidogrel group. Moreover, there were no significant differences in the rates of major bleeding between both agents. Further results on the PCI cohort to be presented at a later meeting.

**CURRENT OASIS-7**

While PLATO announced the superiority of ticagrelor, the CURRENT OASIS-7 (Clopidogrel Optimal Loading Dose Usage to Reduce Recurrent Events Optimal Antiplatelet Strategy for Investigators-7) trial showed that doubling the doses of clopidogrel for the first week in ACS patients undergoing planned PCI reduced stent thrombosis and cardiovascular events. The trial of 17,232 patients who underwent PCI, demonstrated a significant reduction of cardiovascular death, MI, and CVA in the double-dose arm that was driven primarily by the reduction in MI (11). In addition, there was no significant difference in major bleeding despite doubling the dosage of clopidogrel.

**SUMMARY**

The 2009 Congress of the ESC was the venue for new data on breaking clinical trials and established follow-up on some previous trials in interventional cardiology. Complete coverage of ESC Congress 2009 can be accessed at the American College of Cardiology’s Cardiosource website (12).

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